

## CLAIMS

What is claimed is:

1. An balloon catheter comprising a balloon membrane, a tube, a tip, and a stylet, a distal end of the tube is connected to a proximal end of the balloon membrane, the tip is connected to a distal end of the balloon membrane, a distal end of the stylet is connected to the tip, a proximal end of the stylet is connected to a distal end of the tube, the stylet being more flexible towards the distal end than the proximal end.
2. The balloon catheter as claimed in claim 1 further comprising a removable gas insert disposed within at least a portion of the tube.
3. The balloon catheter as claimed in claim 1 wherein the tip is J-shaped.
4. The balloon catheter as claimed in claim 1 wherein a reinforcement ring is disposed within a distal end of the tube, a proximal end of the stylet being fixed to an inner surface of the ring.
5. The balloon catheter as claimed in claim 1 wherein a tongue extends from a distal end of the tube and connects to a proximal end of the stylet.
6. The balloon catheter as claimed in claim 1 wherein the tube is reinforced by a wire and comprises an exposed portion and an unexposed portion and wherein said stylet comprises at least a portion of said exposed portion.
7. The balloon catheter as claimed in claim 1 wherein the tube is reinforced by a wire and comprises an exposed portion and an unexposed portion and wherein at least a portion of said exposed portion projects from the unexposed portion and connects to the stylet.
8. The balloon catheter as claimed in claim 1 wherein the tip

has a fiberoptic sensor fixed to it.

9. The balloon catheter as claimed in claim 1 wherein the tip has a fiberoptic sensor fixed to it and a fiberoptic fiber extending from the sensor through a space defined by the balloon membrane and through a gas shuttle lumen defined by the tube, said fiber being secured to the stylet.
10. The balloon catheter as claimed in claim 1 wherein the tip has a fiberoptic sensor fixed to it and a fiberoptic fiber extending from the sensor through a space defined by the balloon membrane and through a gas shuttle lumen defined by the tube, said fiber being sandwiched between the stylet and a thin walled tube disposed over the stylet.
11. The balloon catheter as claimed in claim 1 wherein the tip has a fiberoptic sensor fixed to it and a fiberoptic fiber extending from the sensor through a space defined by the balloon membrane and through a gas shuttle lumen defined by the tube, said fiber being embedded in the stylet.
12. The balloon catheter as claimed in claim 1 wherein the tip has a fiberoptic sensor fixed to it and a fiberoptic fiber extending from the sensor through a space defined by the balloon membrane and through a gas shuttle lumen defined by the tube, said stylet comprising a tube and said fiber passing through said tube.
13. The balloon catheter as claimed in claim 1 wherein the tip comprises an inner surface and a pocket, and wherein a fiberoptic sensor fixed to the tip has a pressure sensing surface, the fiberoptic sensor is embedded in the tip such that the pressure sensing surface is exposed to said pocket.
14. The balloon catheter as claimed in claim 1 wherein the tip comprises an inner surface, a distal sloping portion, and a pocket, and wherein a fiberoptic sensor fixed to the tip has a pressure sensing surface, the fiberoptic sensor is embedded

in the tip such that the pressure sensing surface is exposed to said pocket, the pocket extends from the distal sloping portion to a point between said distal sloping portion and a proximal end of the tip.

15. The balloon catheter as claimed in claim 1 wherein the tip comprises an inner surface and a pocket filled with a protective material, and wherein a fiberoptic sensor fixed to the tip has a pressure sensing surface, the fiberoptic sensor is embedded in the tip such that the pressure sensing surface is exposed to said pocket.
16. The balloon catheter as claimed in claim 1 wherein the tip comprises an inner surface and a pocket filled with a gel, and wherein a fiberoptic sensor fixed to the tip has a pressure sensing surface, the fiberoptic sensor is embedded in the tip such that the pressure sensing surface is exposed to said pocket.
17. The balloon catheter as claimed in claim 1 wherein the tip comprises an inner surface and a pocket, and wherein a fiberoptic sensor fixed to the tip has a pressure sensing surface, the fiberoptic sensor is embedded in the tip such that the pressure sensing surface is exposed to said pocket, said pocket is sealed by a membrane.
18. The balloon catheter as claimed in claim 1 wherein the tip comprises an inner surface and a pocket filled with a protective material, and wherein a fiberoptic sensor fixed to the tip has a pressure sensing surface, the fiberoptic sensor is embedded in the tip such that the pressure sensing surface is exposed to said pocket, said pocket is sealed by the balloon membrane.